FACT SHEET

UNITED STATES AIR FORCE

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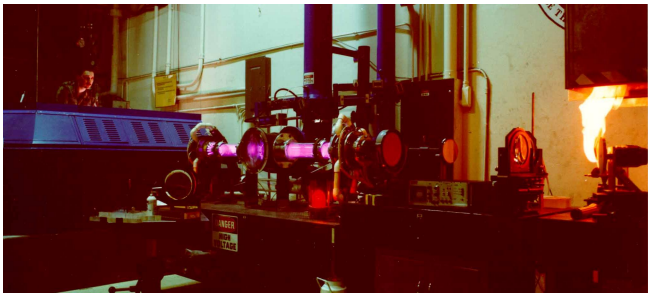
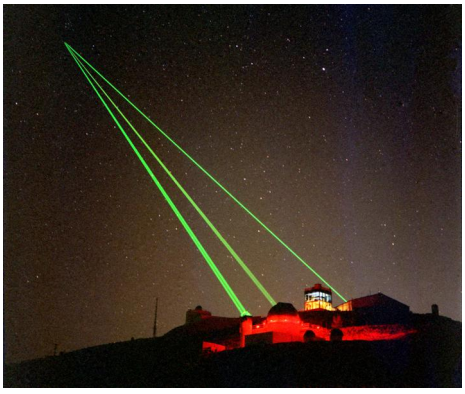
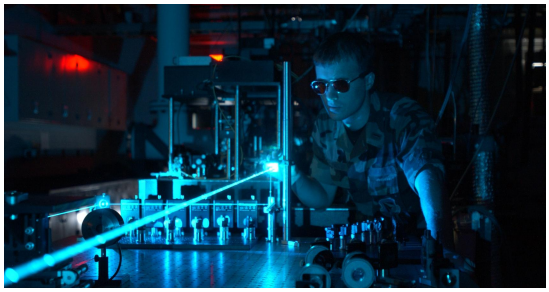
Air Force Research Laboratory

DIRECTED ENERGY DIRECTORATE

– Developing Speed-of-Light Weaponry –







The Directed Energy Directorate is one of the Air Force Research Laboratory's key organizations. Located at the Phillips Research Site on Kirtland Air Force Base, New Mexico, the organization of more than 800 people (including in-house contractors) develops directed energies such as high-energy lasers and high-power microwaves. Scientists here are improving the nation's ability to precisely project these directed energies at the speed of light anywhere, at any time and with graduated intensity. Their work also involves advanced optics and imaging technologies.

With a budget this past year of nearly $309 million and operating from 670,000 square feet of working space, the Directed Energy Directorate emphasizes the integration and transition of research technologies into military systems used by operational commands and maintained by the Laboratory's parent organization, Air Force Materiel Command.

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The Directorate puts its emphasis in six major "product" lines or emphasis areas. One involves directed energy technologies that protect U.S. people and resources; another that gives field commanders more information about space assets; and a third that capitalizes on the global advantages and uses of high-power lasers. A fourth area concentrates on lasers in a tactical role, while a fifth homes in on radio frequency and high-power microwave technologies for electronic attacks to eliminate enemy threats without causing physical destruction. The sixth area examines more exotic directed-energy research that doesn't fall into the other five areas.

The Directorate's research is conducted in three technical divisions (High Power Microwave, Laser, and Optics) with much of the work transitioned through a Technology Applications Division.

The **High-Power Microwave Division** is the Department of Defense's center of excellence in this area, managing the research and development of high-power microwave technologies, including protection against an aggressor's microwave systems. Systems that can identify weapons concealed inside buildings or turn away attacking troops without using lethal force are among the technologies being worked in this Division.

The **Laser Division** is the United States Air Force's center of expertise for developing high-energy laser systems for U.S. military forces. This Division performs cutting-edge research and development of transformational technologies, concentrating on semiconductor, gas, chemical, and solid-state lasers. An example of the scientific contributions made by Division scientists is the invention of the Chemical Oxygen-Iodine Laser, a megawatt-class laser for the Airborne Laser, used to destroy attacking ballistic missiles shortly after being launched.

The **Optics Division** is conducting research to improve optical and imaging systems – improving the nation's ability to view objects in space – as well as developing technologies to accurately put high-energy laser energy on target. The Division operates the largest and most sophisticated telescope facilities in the Defense Department, conducting experiments at the Starfire Optical Range on Kirtland Air Force Base, North Oscura Peak on White Sands Missile Range, and at Hawaii's Maui Space Surveillance Site.

The **Technology Applications Division** concentrates on taking the technologies being developed by the other divisions and transitioning that research to other warfighting organizations. This division monitors potential Department of Defense needs and develops opportunities for transferring directed energy systems to front-line Defense Department units.

Supporting the research is the **Financial & Program Management Division,** which manages the Directorate's strategic development, and the **Integration and Operations Division**, which provides administrative and housekeeping capabilities.

The Air Force Research Laboratory is headquartered at Wright-Patterson Air Force Base, Ohio, and is responsible for research and technology development in support of the Air Force's future and existing aerospace and space weapons systems. Comprised of nine technology directorates and the Air Force Office of Scientific Research, the Research Laboratory has approximately 6,000 military and civilian employees at nine bases throughout the United States.

Current as of November 2004